

unequal cell divisions by which unlike daughter cells arise, one of which possesses ability to produce anthocyan, the other lacking it. In all future divisions of the anthocyanin-producing mutated cells, the daughter cells also inherit the power to produce the color. The contiguous mass of colored cells in a sectional, mottled, or pulverulent pattern is considered the product of a single mutant cell. If the mutation occurs at a very early stage in the life of the plant, sectorial coloration is likely to result. If somewhat later, after the main organs have been laid down, the mottled pattern results. When the cell mutation occurs very late, so that only a few daughter cells are formed by each mutant, the pattern is pulverulent.

Patterns of the second group, rounded areas, and flecks of anthocyanin occur more rarely than those of the first group. Comparison of these patterns with the first indicates that they do not arise by cell mutation. Using seed crystals as an illustration, he suggests the possibility that at certain points anthocyanin-producing "seed colloids" of unknown composition arise, and that around these central points aggregation continues, molecules or molecular groups coming from surrounding cells, which are thus left colorless. This hypothetical colloidal substance would have some direct or indirect relation to the production of anthocyanin, either as a source of building material, or as a catalytic agent.—CHAS. A. SHULL.

**Quantitative nature of sex.**—SCHAFFNER<sup>12</sup> has published some significant observations on sex intermediates. The white mulberry shows about 40 per cent pure staminate plants, 40 per cent carpellate, and 20 per cent intermediate in all gradations. Among the last, the most interesting example consists of a pure staminate tree with a single, almost pure carpellate branch, showing "that a sex reversal can and sometimes does take place in an old tissue whose cells are removed by thousands of vegetative divisions from the original zygote. It assures us that sex control is only a matter of finding out how to change the prevailing physiological state." The peach leaf willow showed only 9 per cent intermediates. These were primarily staminate, but had many catkins which were staminate only at the base and became carpellate at the end. "But on the transition zone, between the staminate and carpellate parts, the axis seemed to be neutral in regard to sex, and here bisporangiate flowers were frequently present." Also, in this neutral zone abnormal flowers were very frequent, structures developing which were partly staminate and partly carpellate. These observations serve to support the conclusions published by the author in 1910 to the effect that "sexuality is a condition and not a character" (factor). Observations of much the same nature have recently been published by STOUT.<sup>13</sup>—MERLE C. COULTER.

<sup>12</sup> SCHAFFNER, JOHN H., The nature of the dioecious condition in *Morus alba* and *Salix amygdaloides*. Ohio Jour. Sci. 19:409-416. 1919.

<sup>13</sup> STOUT, A. B., Intersexes in *Plantago lanceolata*. BOT. GAZ. 68:109-133. pls. 12, 13. 1919.